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EXAMINER

DINH, TUAN T

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/813,257
Filing Date: March 19, 2001
Appellant(s): KOLB ET AL.

Lowell E. Kolb
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 09, 2005 appealing from the Office action mailed March 01, 2005.

This is a supplemental of Examiner's Answer that responses to a correction of an Appeal Brief filed on December 21, 2006.

(1) Real Party in Interest:

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6,127,038	McCullough et al.	10/2000
US 5,639,989	Higgins, III	02/1999
JP 20034457	Kotani et al.	02/1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 3-5, 7, 11-12, 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by McCullough et al. (U. S. Patent 6,127,038), in the record.

As to claim 1, McCullough et al. disclose a printed circuit board (PCB, 12-figure 1, column 2, line 37) comprising:

a printed wiring board (PWB); a component (22, column 3, line 1) mounted on said PWB, wherein the PWB has a volume of space bounded by at least one of a body of the component (22), a lead (24, column 3, line 2) of the component, and the printed wiring board, wherein the volume of space has at least one opening on the surface of the PWB; (note: it should be noted that the space would defined as a space on top and

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bottom surface of the PWB, a space that is formed underneath of the leads of the component, or as a space that formed between each of the components 22 mounted on the PWB 12); and

an electrically non-conductive filler material (14, column 3, lines 8, 52-64) disposed on the surface of the PWB so as bridge across the at least one opening of the volume space to render the volume of space substantially inaccessible to subsequently-applied coatings (16, column 3, line 15).

As to claim 12, McCullough et al. disclose a printed circuit board (PCB, 12-figure 1, column 2, line 37) comprising:

a printed wiring board (PWB); a plurality of components (22, column 3, line 1), each mounted on said PWB, wherein the printed circuit board has at least one volume of space (see the note in claim 1) bounded by at least one component lead (24), a component body (a body of a component 22), and the printed wiring board (PWB), wherein each at least one volume of space comprises at least one opening (underneath of component 22 or between the components) on the surface of the PCB; and

a layer of non-electrically-conductive filler material (14, column 3, lines 8, 52-64) adhered to the PCB surface to provide a contoured, contiguous filler material surface, wherein the filler material at least partially infill the at least one volume of space through the at least one opening and further wherein the filler material bridge across the at least one space so as to encapsulate and seal the volume of space (top and bottom surfaces of the PWB, underneath of leads of the component, or space between the components).

As to claim 3, McCullough et al. disclose the space comprises the space is bounded by leads (24), of the body of components (22) and the PWB, wherein at least one of the at least one space/openings on the surface of the PCB is located between neighboring component leads (24).

As to claim 4, McCullough et al. disclose the component is one of a plurality of components (22), and wherein the space is bounded by at least two or more of the plurality of components or between the components (22) and the PCB.

As to claim 5, McCullough et al. discloses the space bounded by the component (22) and the PWB.

As to claims 7 and 14, McCullough et al. disclose the filler material is an epoxy (column 3, lines 52-54).

As to claim 11, McCullough discloses the subsequently-applied coating (16) comprises a layer of dielectric coating (see column 3, lines 65-66) that conformingly coats exposed surfaces of the PWB, the component (22), and the filler material (14), wherein the at least one opening of the space is sufficiently large to prevent the dielectric coating from bridging across the opening without the presence of the filler material.

As to claim 15, McCullough et al disclose the PCB further comprising a low viscosity, high adherence dielectric coating (16) that, when applied and cured, covers portions of said PCB coated with said filler material (14), wherein the filler material (14) prevents the dielectric coating (16) from entering the at least one space.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 8-10, 13, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCullough et al. (U. S. Patent 6,127,038) in view of Kotani et al. (JP 200034457 A, hereafter JP), in the record.

As to claim 6, 9, 13, and 17, McCullough et al. do not disclose all of the limitations of the claimed invention; except for the filler material is thixotropic, or thermally cured epoxy.

Kotani et al. (JP) shows a high-pressure resistant thixotropic epoxy resin adhesive (see abstract), the adhesive includes a thermally cured epoxy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ thixotropic epoxy resin including a thermally cured epoxy in the PCB of McCullough, as taught by Kotani et al. (JP) for the purpose of retaining a sufficient adhesion thickness under high bearing pressure and maintaining a strength at high temperature that applied on the surface of the PCB.

As to claim 8, McCullough et al. do not disclose said epoxy is one of the families of Bisphenol-A epoxies mixed with an amine hardener.

Kotani et al. (JP) shows an epoxy resin is one of the families of Bisphenol-A epoxies mixed with an amine hardener (see pages 2-3 of the translation).

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It would have been obvious to one of ordinary skill in the art at the invention was made to employ a epoxy resin is one of the family of Bisphenol-A epoxies mixed with an amine harder in the PCB of McCullough, as taught by Kotani et al. for purpose of providing a stiffness and high temperature performance.

As to claim 10, McCullough et al. do not disclose said epoxy be a latex based non-electrically conductive epoxy. Kotani et al. shows an epoxy resin that is a latex based non-electrically conductive composition (see pages 2-3 of the translation).

It would have been obvious to one of ordinary skill in the art at the invention was made to employ a epoxy resin is a latex based non-electrically conductive epoxy in the PCB of McCullough, as taught by Kotani et al. for purpose of providing a high resistance to damage from moisture and high temperature performance.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCullough et al. (U. S. Patent 6,127,038) in view of Higgins, III (U. S. Patent 5,639,989), in the record.

As to claim 16, McCullough et al. do not disclose the PCB further comprising a conductive coating covered at least a portion of the dielectric coating layer, and the conductive and dielectric coatings are formed a conformal electromagnetic interface (EMI) shield that adheres to and conforms with the PCB surfaces.

Higgins, III shows a conductive coating (62) covered a dielectric coating layer (60-figure 3), and the conductive and dielectric coatings are formed a conformal

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electromagnetic interface (EMI) shield that adheres to and conforms with the PCB surfaces, see column 9, lines 53-67.

It would have been obvious to one of ordinary skill in the art at the invention was made to employ a conductive coating covered a dielectric coating in the PCB of McCullough, as taught by Higgins, III, for purpose of providing ground shielding potential to the PCB.

(10) Response to Argument:

Appellant argues:

(a) McCullough discloses a first coating layer (14), which does not bridge across cavity openings.

Examiner disagrees. McCullough disclose a PCB (12), column 2, line 67 comprising a plurality of components (22) having leads (24) mounted on the surface of the PCB, the PCB having the volume of space with one or more openings formed on the surface of the PCB, a first coating (14) does coat and bridge across one or more openings of the volume of space. The volume of space would defined such as a space on top and bottom surface of the PCB, a space formed between leads of the components above and anywhere around the leads, a space formed between the component to the component mounted on the PCB, or any of these spaces or any portion of these space meets applicant's broad limitation of openings. The first coating (14) is coated on the volume of space surfaces of the PCB. Thus, the coating (14) of McCullough meets all of the limitations of the claims (claims 1 and 12). Therefore,

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examiner believes the Office action is proper and including all of the limitations of the claimed languages.

(b) McCullough does not disclose or suggest the first coating bridge across cavity openings so as to render the cavity substantially in accessible to a second coating.

Examiner disagrees because the first coating (14) is bridged across the cavity openings (see explanation above) on the surface of the PCB, and the first coating is used to render the cavity on the surface of the PCB and substantially inaccessible to the second coating (16) because that portion of the space taken up by the coating cannot receive any other coating. Therefore, the first coating (14) bonded to the surface of the PCB so that substantially inaccessible to the second coating (16) coated on the PCB.

(c) McCullough in view of Kotani (Japan Patent 20034457) fail to disclose a filler material, which is a thixotropic or a thermally cured epoxy.

Examiner disagrees. McCullough discloses the first coating (14), which is a conformal coating selected from the group mainly consisting of parylene, urethane, acrylics epoxies and silicones. However, McCullough does not specific disclose the first coating epoxy (14) containing thixotropic epoxy. The thixotropic epoxy is a conventional and well known of material in the art in order to provide a high face pressure resistance. Further, for the applicant benefic, Examiner recited the Kotani reference that teaches the epoxy, which is a thixotropic epoxy. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the thixotropic epoxy of Kotani to modify the coating epoxy of McCullough for the purpose of providing a strong bonding of a high face pressure resistance. The strong bonding is important in

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this art because, it allows the PCB to be used in applications where a high pressure is needed, for example, in aircraft in high pressure used or when the PCB is being overmolded by certain plastics.

(d) McCullough in view of Higgins fail to disclose "a conductive coating covering at least a portion of said dielectric coating.

It is incorrect. Higgins as shown in figure 3 teaches a conductive coating (62) covering a portion of a dielectric coating (60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form a conductive coating covering at least a portion on a dielectric coating as taught by Higgins employed in the PCB of McCullough for the purpose of grounding or shielding the components mounted on the PCB.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted.

Tuan Dinh
October 16, 2004.



TUAN T. DINH
PRIMARY EXAMINER

Conferences:

Kammie Cuneo. *AK for KC*

Darren Schuberg. *DS*